Feb. 16, 1937. J. CALVERT 2,071,023

WEIGHTING MECHANISM EMPLOYED IN THE ROLLER SYSTEMS OF RING SPINNING, DRAWING, OR SPEED FRAMES AND LIKE TEXTILE MACHINES

Filed Sept. 4, 1935 2 Sheets-Sheet 1

Fig. 1.

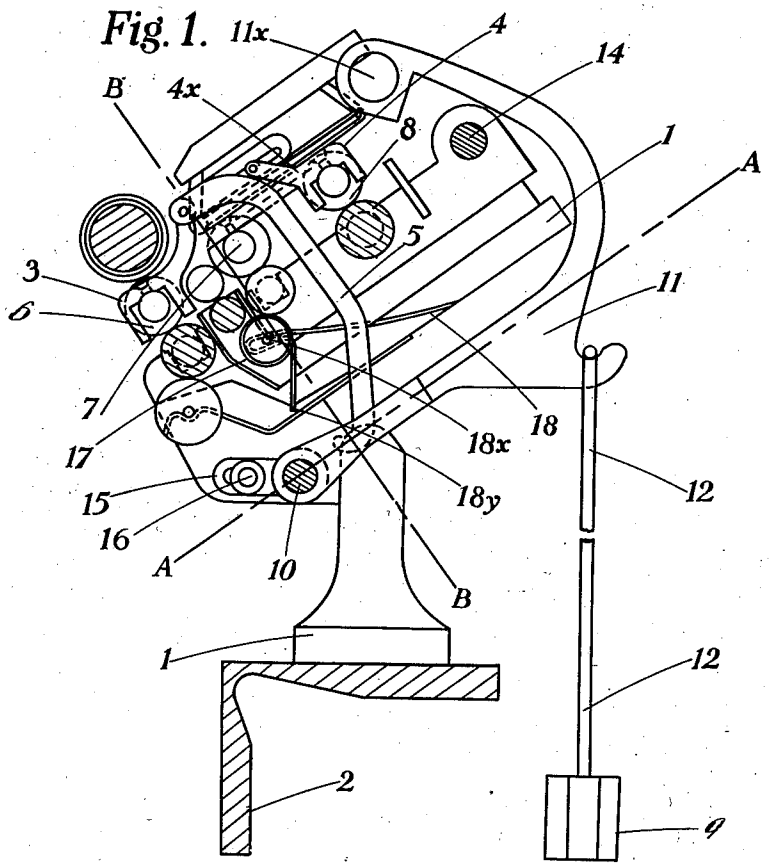


Fig. 2.

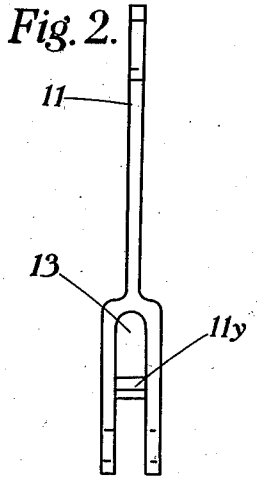
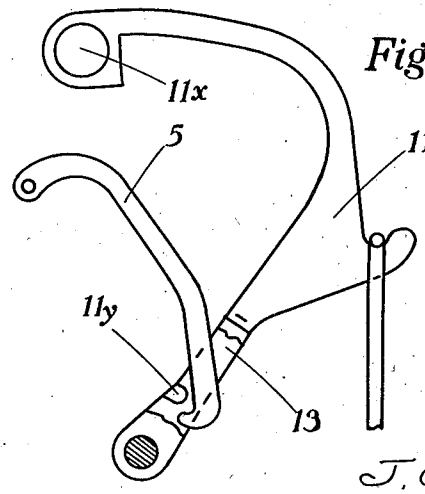


Fig. 3.



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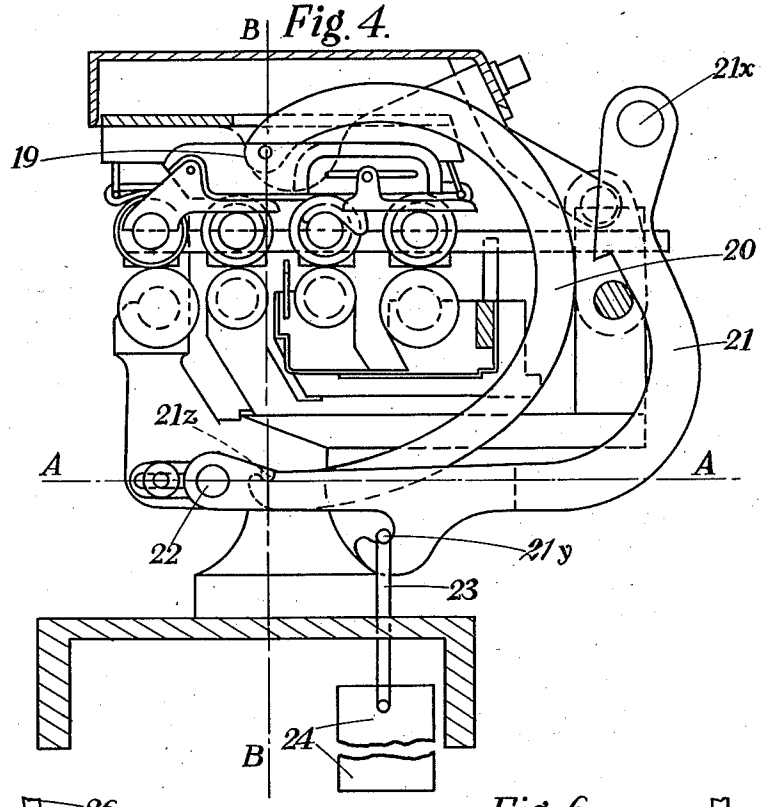
ATTORNEYS

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Fig. 4.



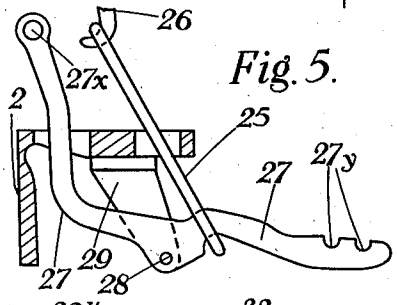


Fig. 5.

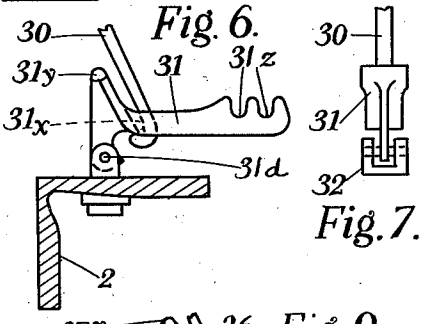


Fig. 6.

Fig. 7.

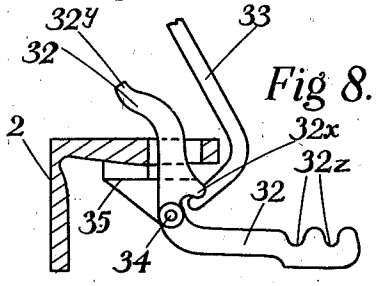


Fig 8.

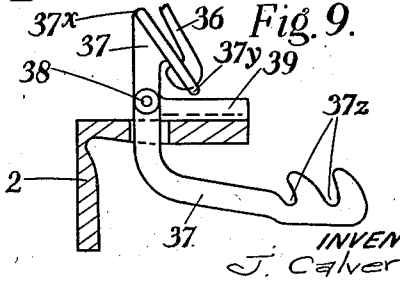


Fig. 9.

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WEIGHTING MECHANISM EMPLOYED IN THE ROLLER SYSTEMS OF RING SPINNING, DRAWING, OR SPEED FRAMES AND LIKE TEXTILE MACHINES

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Application September 4, 1935, Serial No. 39,160
In Great Britain February 22, 1935

2 Claims. (Cl. 19—135)

The invention relates to ring spinning, drawing, speed or other like textile frames or machines, and conveyor band systems, with which roller systems are employed, and has for object to provide an improved and effective weighting device for said rollers, such weighting device being of the type comprising a saddle bearing upon the rollers to be weighted, a weight suspended from said saddle by a stirrup pivoted to the former, and a hand-operable pivoted lever associated with the stirrup and adapted for connection thereto and disconnection therefrom so as to impose the weight thereon or remove it therefrom, the weight remaining mechanically supported throughout the connecting or disconnecting operation.

According to the invention, a weighting mechanism of the said type is so arranged that an imaginary line, connecting the pivotal axis of the hand-lever to the point of contact between said lever and the stirrup, is at right angles to an imaginary line connecting the latter point to the axis about which the stirrup is pivoted on the saddle.

We are aware that weighting mechanisms not of the type hereinbefore defined are known in which a line joining the point of contact between the stirrup and the weight-supporting lever to the pivotal axis of said lever is at right angles to a line joining the said point of contact to the point at which the stirrup is connected to the saddle.

Various embodiments of the invention are illustrated in the accompanying drawings, whereof Fig. 1 is a sectional elevation of a drafting roller stand suitable for use in an ordinary ring spinning frame and incorporating a weighting device according to the present invention. Fig. 2 is a view at right angles to Fig. 3, which is a view of a portion of detail in Fig. 1, but in a changed position, as hereinafter described. Fig. 4 is a view similar to Fig. 1, illustrating the application of the invention to a speed frame. Figs. 5, 6, 7, 8, and 9 show modifications of the invention, Fig. 7 being at right angles to Fig. 6.

In Figs. 1 to 3 inclusive, the roller stand is indicated at 1, supported by a part of the beam of the frame at 2, and saddles of known character are shown at 3 and 4 respectively. In pivoted connection with the saddle 3 is a stirrup 5, which is seen to be situated between the rows of rollers indicated, and remote from the front of the roller stand 1, shown at the left hand side of the said figure. As is well known, it is customary for the stirrup to bend towards the front of the roller stand.

The pressure due to a weight 9 is transmitted through the saddles 3 and 4 to the rollers 6 and 7 and 8, when the parts are connected together as illustrated in Fig. 1, said weight 9 being in link connection with a lever device 11, pivotally mounted upon the shaft 10, termed the fulcrum-shaft, which extends along the length of the frame and is positioned towards the front of the stirrup 5. Said lever device 11 is provided with a finger-hole 11_x, whereby it may be raised or lowered, and the weight 9 is connected by a link 12 to a projecting portion, as shown.

The device 11, the lower part of which is shown in broken form at Fig. 3, has a cavity at 13 through which the lower and hooked end of the stirrup 5 normally passes. This hooked end is capable of engaging a cross-bar or member 11_y whereby the pressure due to the weight 9 is transmitted to the rollers 6, 7, and 8.

In Fig. 1, two axes or lines of reference are shown at A—A and B—B respectively, the former being parallel to the imaginary line through the centres of the axes of the rollers 6, 7, and 8 before-named, and passing through the axis of shaft 10 and the point of contact between the bar 11_y and the stirrup 5. The line B—B is at right angles to the first line A—A mentioned, and passes through the point of contact between the stirrup 5 and the cross-bar 11_y, and the axis about which the stirrup 5 is pivoted to the saddle. These essential conditions are of practical utility for giving good results in weighting.

When it is required to relieve the saddles from the pressure of the weight 9, e. g. when the rollers below said saddles need attention, or for other reasons, the stirrup 5 is disengaged from the device 11 in a simple manner by raising said device 11 on its pivot or shaft 10 with the aid of the finger-hole 11_x, until the said device 11 reaches a position relatively to the stirrup 5, substantially as indicated in Fig. 3. At such position, the saddles and stirrup may be removed together in an upward direction, since the hooked end of the stirrup is obviously capable of being passed through the slot or cavity 13.

While the stirrup and saddles are removed from the frame, means may be provided so that the lever device 11 is supported in a position to keep the finger-hole 11_x conveniently situated for the operator's use. In Fig. 1, one method of so supporting the part of the device referred to, is to make use of the cap-bar shaft 14 of the frame.

When the stirrup 5 and the device 11 are to be reconnected, the said device 11 may be slightly raised on its pivot or shaft 10 to enable the lower hooked end of the stirrup 5 to pass through the aperture or slot 13, and the parts will automatically engage on the device and its weight being allowed to fall to the level at which the weighting effect comes upon the hooked end of the stirrup.

The position of the axis of the shaft 10 can be adjusted in any suitable manner, as desired. One form of means for this purpose, as shown in Fig. 1, comprises a slotted extension piece 15 connected with the stand 1 by means of a bolt 16 or the like, and carrying the shaft 10, and the movement of said member 15, the bolt 16 being temporarily released, enables the requisite adjustment to be made, the said bolt being subsequently re-tightened.

The saddles are, of course, provided with means whereby the roller-axles below may be suitably lubricated. The arrangement shown in Fig. 1 is furnished with a channel 4_x in the saddle 4, connecting the oil holes indicated, which lead to the axles of the rollers 7 and 8.

Reference to Fig. 1 aforesaid will show that the device 11, throughout all the movements described, is mechanically supported by shaft 10 from the beam 2. The stirrup 5 and the saddles 3 and 4 may conveniently be formed integrally, as shown, although they may be individual units, if desired. It will also be seen that the upper surface of the beam 2 in the arrangement illustrated is kept quite clear of impedimenta, so facilitating cleaning or other operations of or upon the top part of the said beam.

The rearward position of the stirrup 5 also enables an ordinary clearer roller, as shown at 17, to be removed. A support 18, shown here in the form of a spring and carrying the axle of roller 17, is so shaped that the disengagement of the axle of the roller 17 enables such roller to be removed backwards bodily until it reaches the bend 18_x of the said support 18, after which the said roller axle may be passed down until clear of the lower end 18_y of said support 18, when it may be brought forward for complete removal from the frame. The roller 17 may be replaced by reversing the movements hereinbefore described. Additional details, such as the adjustment of the weight 9 on link 12, may be incorporated if desired.

The means herein described enable the use of a weight of smaller dimensions than ordinarily adopted, thus enhancing the compactness of the arrangement.

It is to be understood that there is a stirrup and lever device with each weighting means for each set of rollers, the latter being arranged in series form along the length of the frame in the customary manner. In some cases, a spring may be employed in lieu of a weight, such spring being anchored to some fixed part of the frame.

With reference to Fig. 4, the saddles are indicated at 19, the stirrup at 20, and a lever device according to the invention at 21. In this arrangement the stirrup 20 is behind the rollers, and not between the rows of rollers as shown in Fig. 1. In the arrangement illustrated in Fig. 4, the device 21 is freely mounted upon a fulcrum-shaft 22 and a finger-hole in the device 21 is indicated at 21_x.

A hooked part 21_y of the device 21 carries a link 23 to which a weight 24 is attached. A cross-bar 21_z of the said device 21 is adapted to engage with the hooked end of the stirrup 20, and it will be seen that the device 21 can be moved about the axis of shaft 22 by means of the said finger-hole 21_x, thus enabling the stirrup to be disengaged from the device 21 for weight-relieving purposes, as hereinbefore described with reference to Fig. 1.

In Fig. 5, a link 25 is shown connecting a stirrup 26 to a lever device 27 according to the invention, the latter being pivoted about the axis of a shaft 28 which is supported by a bracket 29 attached to the beam 2. A finger-rest or hole in the device 27 is indicated at 27_x for use in the manner already explained with reference to Fig. 1, and a suitable weight or weights may be suspended from the hooked or curved end 27_y of the device as required.

In Figs. 6 and 7 a stirrup 30 of hooked form is shown connected directly to an inclined part 31_x of a lever device about a shaft 31_d carried by a support attached to the beam 2. Such device 31 is also provided with recessed or like parts at 31_z forming positions from which a weight or weights (not indicated) may be suspended in any convenient manner, e. g. by a link or links. A finger-rest or projection 31_y may be pulled towards the front of the frame for the purpose of relieving the stirrup of the applied weight, when the stirrup 30 may readily be disconnected from the device 31, as hereinbefore described with reference to Fig. 1.

In the embodiment last mentioned, the connection between the stirrup 30 and the lever device 31 is made at a point above the level of the beam 2, but in the embodiment illustrated in Fig. 8 the point of connection is below the level of the beam, a projection 32_x on a lever device 32 being capable of engagement with a recessed or hooked part in the stirrup 33. The lever device 32 is pivoted at 34 to a bracket 35 attached to the under side of the beam 2 aforesaid, and slots for link connection between the lever device 32 and a weight or weights (not shown) are provided in an extension of the former at 32_z. Above the level of the beam 2 and at the upper end of the device 32, the latter is adapted at 32_y for operation by the finger when the stirrup and saddles in connection with it are to be relieved of weight and temporarily removed.

In Fig. 9 an arrangement somewhat similar to Fig. 8 is illustrated, but the connection between the stirrup 36 and the lever device 37 is made above the level of the beam 2. In this example, a projection 37_y of the device 37 forms a slot for positioning the stirrup 36, and the device 37 is pivoted at 38 to a bracket 39 attached to the beam 2. Slots for attachment of means for carrying a weight or weights (not shown) are indicated at 37_z.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A weighting mechanism for roller systems of ring spinning, drawing or speed frames and other textile machines employing the same, comprising a saddle bearing on the rollers of the mechanism, a member pivotally suspended from the saddle and having a hook portion at its lower end, a pivotally mounted lever movable in a path parallel to the hook portion of said member and having a slotted portion adapted to receive said hook portion, means in said slotted portion of the lever adapted to engage said hook portion, and a weight bearing on the lever for pulling the hook member and saddle downwardly.

2. A weighting mechannism for roller systems

of ring spinning, drawing or speed frames and other textile machines employing the same, comprising a saddle bearing on the rollers of the mechanism, a member pivotally suspended from the saddle and having a hook portion at its lower end, a pivotally mounted lever movable in a path parallel to the hook portion of said member and having an elongated slot adapted to receive said hook portion, a cross bar spanning said slot and adapted to engage the hook portion of said pivotally suspended member, said slot being of a length sufficient to permit forward and rearward movement of the hook portion of the pivotally suspended member therein to respectively engage and disengage said cross bar, and a weight bearing on the lever for pulling the hook member and saddle downwardly.

JAMES CALVERT.